

p 353 54-56 all

(54) $\rho = 0.588 \frac{\text{kg}}{\text{sec}}$ $\rho = 735 \text{ kg/m}^3$
 $R = 3.18 \times 10^{-3} \text{ m}$

$$\rho A V = 0.588 \frac{\text{kg}}{\text{sec}}$$

$$735 (\pi (3.18 \times 10^{-3})^2 \cdot V) = 0.588$$

$$\boxed{V = 2.5 \text{ m/s}}$$

(55) $\rho = 1030 \frac{\text{kg}}{\text{m}^3}$ $\boxed{9.5 \times 10^{-4} \frac{\text{kg}}{\text{m}^3} \cdot 6 \text{ hrs}}$

$$\rho \cdot A \cdot V = \frac{9.5 \times 10^{-4} \text{ kg} \cdot \text{m}^3}{6 \text{ hrs} \times 3600 \frac{\text{sec}}{1 \text{ hr}}}$$

$$\rho \cdot A \cdot V = 1030 \frac{\text{kg}}{\text{m}^3} \cdot \frac{9.5 \times 10^{-4} \text{ m}^3}{6 \times 3600}$$

$$\boxed{4.5 \times 10^{-5} \frac{\text{kg}}{\text{sec}}}$$

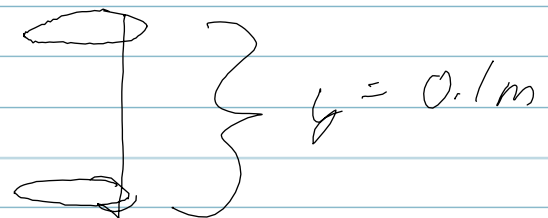
(56) $A = 1.8 \times 10^{-4} \text{ m}^2$
 $V = 0.85 \text{ m/s}$

$$A_1 V_1 = A_2 V_2$$

$$0.85 \text{ m/s} (1.8 \times 10^{-4}) = 1.65 \cdot A \cdot V^2 - V_0^2 + 2cy$$

$$\boxed{A = 9.3 \times 10^{-5} \text{ m}^2}$$

$$V = \sqrt{.85^2 + 2(-10)(-.1)}$$



61) $\rho = 354 \text{ kg/m}^3$ $V = 1.5 \text{ m/s}$
 $\rho_{\text{Air}} = 1.29 \text{ kg/m}^3$

$$P_1 + \rho g h_1 + \frac{1}{2} \rho v_1^2 = P_2 + \rho g h_2 + \frac{1}{2} \rho v_2^2$$

$$P_1 + 0 + 0 = P_2 + 0 + \frac{1}{2} \rho v_2^2$$

a) $P_1 - P_2 = \frac{1}{2} \rho v_2^2 = 145.1 \text{ Pa}$

b) $\frac{145 \text{ N}}{1 \text{ m}^2}$

62) $\rho = 1100 \text{ kg/m}^3$

$$4.1 \times 10^6 \text{ Pa} = \frac{1}{2} \rho v_2^2$$

$$P = 4.1 \times 10^6 \text{ Pa}$$

above atm

$$V = 86 \text{ m/s}$$

63) $\rho = 1.29 \text{ kg/m}^3$

$$P_1 + \rho g h_1 + \frac{1}{2} \rho v_1^2 = P_2 + \rho g h_2 + \frac{1}{2} \rho v_2^2$$

$$P_1 - P_2 + 0 = \frac{1}{2} \rho v_2^2 - \frac{1}{2} \rho v_1^2$$

$$P_1 - P_2 = \frac{1}{2} 1.29 (225^2 + 251^2)$$

$$7982 \text{ Pa} = \frac{F}{A}$$

$$191,500 \text{ N}$$